

TAXONOMIC REVISION OF POLLALESTA H.B.K.
(COMPOSITAE: VERNONIEAE)

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Pollalesta H.B.K. (Compositae: Vernonieae) is a relatively small genus of trees and shrubs distributed from Costa Rica in Central America and the islands of Margarita and Trinidad in the West Indies, south to northern Peru and Brazil in South America. The center of distribution of *Pollalesta* is Venezuela and Colombia (Figures 4-6).

Pollalesta has been maintained as distinct from *Vernonia* Schreb. mainly on the basis of its pappus structure which is more like that of *Stilpnopappus* Mart. ex DC. than that of *Vernonia* Schreb. (Humboldt, Bonpland, & Kunth, 1820; Bentham & Hooker, 1873; Engler & Prantl, 1894; Aristeguieta, 1964), and has traditionally been placed near *Piptocoma* Cass., *Stilpnopappus* Mart. ex DC., *Piptolepis* Sch.-Bip., and *Proteopsis* Mart. ex Sch.-Bip. (Bentham & Hooker, 1894; Aristeguieta, 1964).

TAXONOMIC HISTORY

The genus *Pollalesta* H.B.K. was formerly known by the name *Oliganthes* Cass. (Cassini, 1817). *Oliganthes*, as originally conceived by Cassini, consisted of a single species from Madagascar, *Oliganthes triflora* Cass. (Cassini, 1818). In 1820, Humboldt, Bonpland, and Kunth described three new closely related species from the Neotropics (in the group under consideration in this study). However, they considered each of these taxa to constitute separate genera, i.e., *Odontoloma acuminata* H.B.K., *Dialesta discolor* H.B.K., and *Pollalesta vernonioides* H.B.K. In 1825, Cassini reported that *Pollalesta vernonioides* H.B.K. was equivalent to *Oliganthes triflora* Cass. Cassini's interpretation was apparently based solely on the published descriptions of the taxa which do indeed sound exceedingly similar. In 1847, Schultz-Bipontinus published a revision of the genus, retaining the generic name *Oliganthes* Cass. for the Neotropical species. Mattfeld (1935) decided that the name *Oliganthes triflora* Cass. should be used only for the plant from Madagascar and that the species previously known as *Pollalesta vernonioides* H.B.K. was indeed a separate

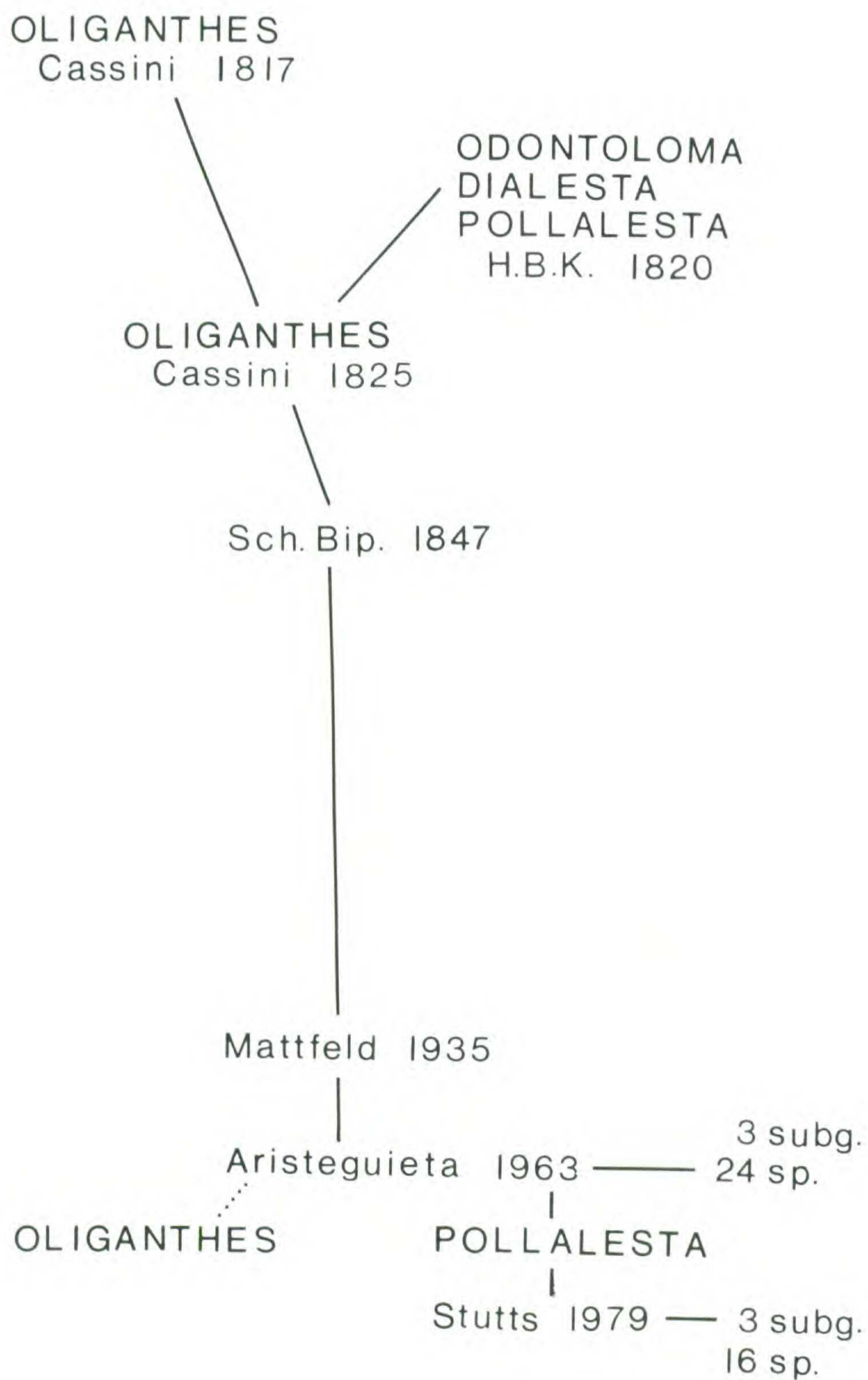


Figure 1. Taxonomic history of *Pollalesta*

species endemic to the Neotropics. He proposed the new combination *Oliganthes vernonioides* (Kunth) Mattf. Since the time of Mattfeld's treatment all new species in this group from the Neotropics have been assigned to the genus *Oliganthes* Cass. sensu Schultz-Bipontinus.

After studying the species of *Oliganthes* from Madagascar and those of the Neotropics, Aristeguieta (1963) separated the Neotropical species from those of Madagascar. He selected the name *Pollalesta* from among the three generic names published simultaneously by Humboldt, Bonpland, and Kunth (1820) to designate the Neotropical species. In addition, he revised the genus and named ten new species. Aristeguieta's treatment resulted in the recognition of twenty-four species in three subgenera, the subgenera being based upon the three original genera of Humboldt, Bonpland, and Kunth.

Recently, study of herbarium specimens of the Flora of Peru project along with a survey of the literature indicated that the number of species of *Pollalesta* was inflated. This apparently resulted from emphasis having been placed on variation in extremely plastic vegetative characters. The tribe Vernonieae is well known for highly variable vegetative morphology (Jones, 1976, 1977).

The purpose of this study was to re-examine the genus in a taxonomic revision in order to develop a workable classification of *Pollalesta*. This treatment is based upon morphological, palynological, and chemical data obtained from herbarium specimens borrowed from appropriate major herbaria in the United States and Europe, as well as throughout the range of the genus. A number of former collection sites for *Pollalesta* in Venezuela were visited but no specimens were located at any of these sites as each had been severely disturbed by human activities. No chromosome counts have been reported for the genus.

PALYNOLOGY

Wodehouse (1928), Smith (1969), Jones (1970, 1973), Kingham (1976), and Keely and Jones (1977) have examined pollen morphology in several members of the tribe Vernonieae and found both external morphology and pollen size to be useful in developing classifications. Thus it was felt that a study of the pollen characters of *Pollalesta* might prove helpful in delimiting taxa.

Pollen grains were acetolized by the procedures of Erdtman (1966) and examined utilizing both light microscopy and scanning electron microscopy.

All species were found to possess similar pollen grains; subechinolate, triporate grains with prominent spines (Fig. 2). This type of pollen grain has previously been described by Keely and Jones (1977) as *Vernonieae* type A. Type A pollen is considered by Jones (personal communication) to be primitive for the tribe. No consistent differences were detected between species in size of pollen grains which varied between ca. 44–54 μm in diameter (spine tip to spine tip). Some variation in spine length was noted but could not be correlated with species differences.

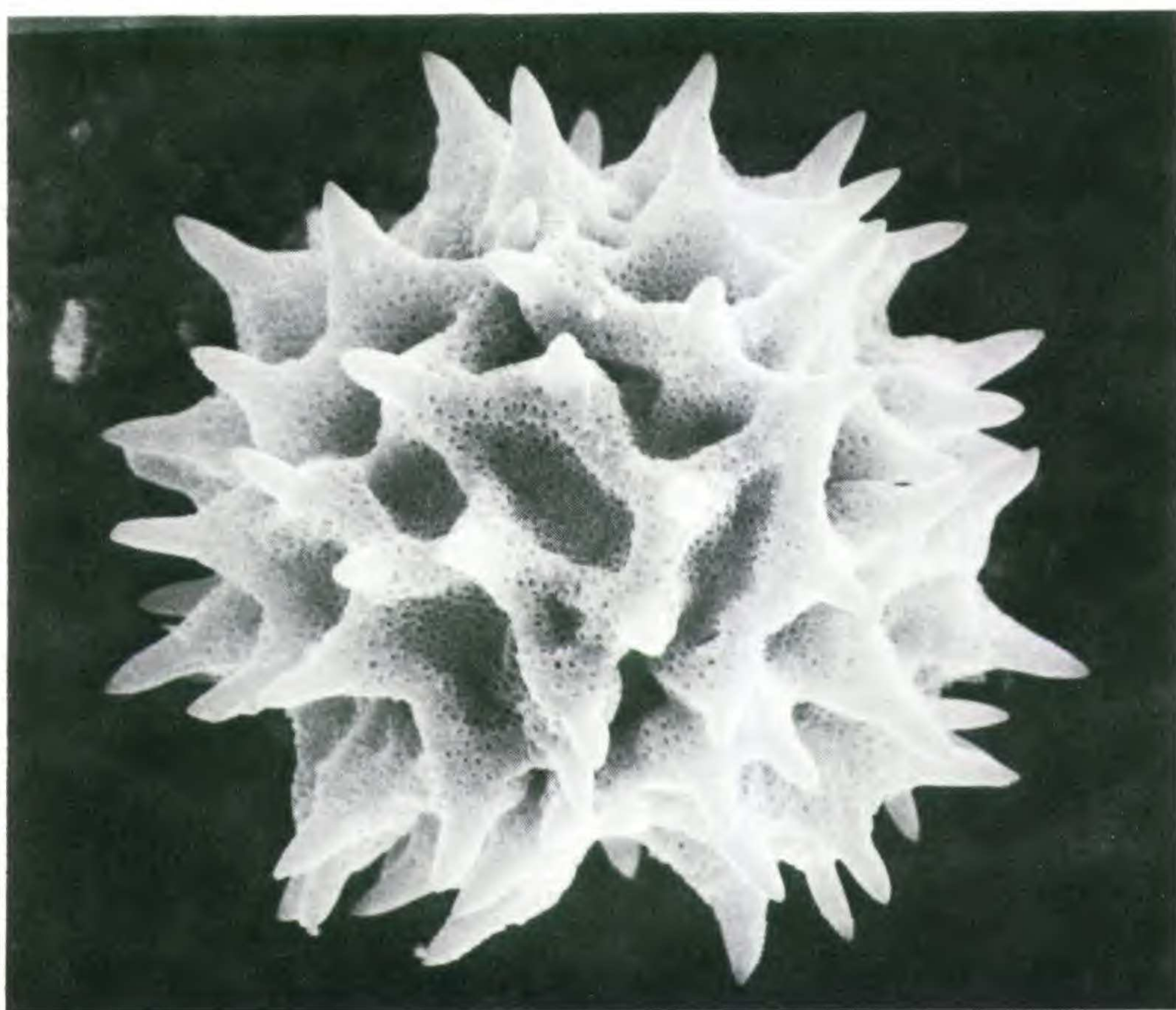


Figure 2. SEM micrograph of pollen grain of *Pollalesta roraimensis*. Actual size: 44 μm spine tip to spine tip.

FLAVONOID CHEMISTRY

A paper chromatographic survey of leaf flavonoids was carried out on twelve of the sixteen species currently recognised in *Pollalesta*. The procedures used were those of Mabry et al. (1970) and Giannasi (1975), with some slight modifications.

Although very little information was available on flavonoids in *Pollalesta*, their occurrence had been previously reported (Harborne & Williams, 1977). J. B. Harborne (pers. comm.) has tentatively identified the common flavones apigenin and luteolin, along with the common flavonols kaempferol and quercetin, all as -7-0-glucosides, and quercetin-3-0-glycoside, from species of *Pollalesta*. The occurrence of these compounds, all except kaempferol-7-0-glucoside and apigenin-7-0-glucoside, in various species of *Pollalesta* was confirmed in this study. Interestingly, the only apigenin that could be identified in this study was apigenin-6,8-C-diglycoside, which was present in all species examined, and the only kaempferol identified was kaempferol-4'-0-glycoside-5,7-dimethyl ether. However, several of the unidentified compounds may be either apigenins or kaempferols.

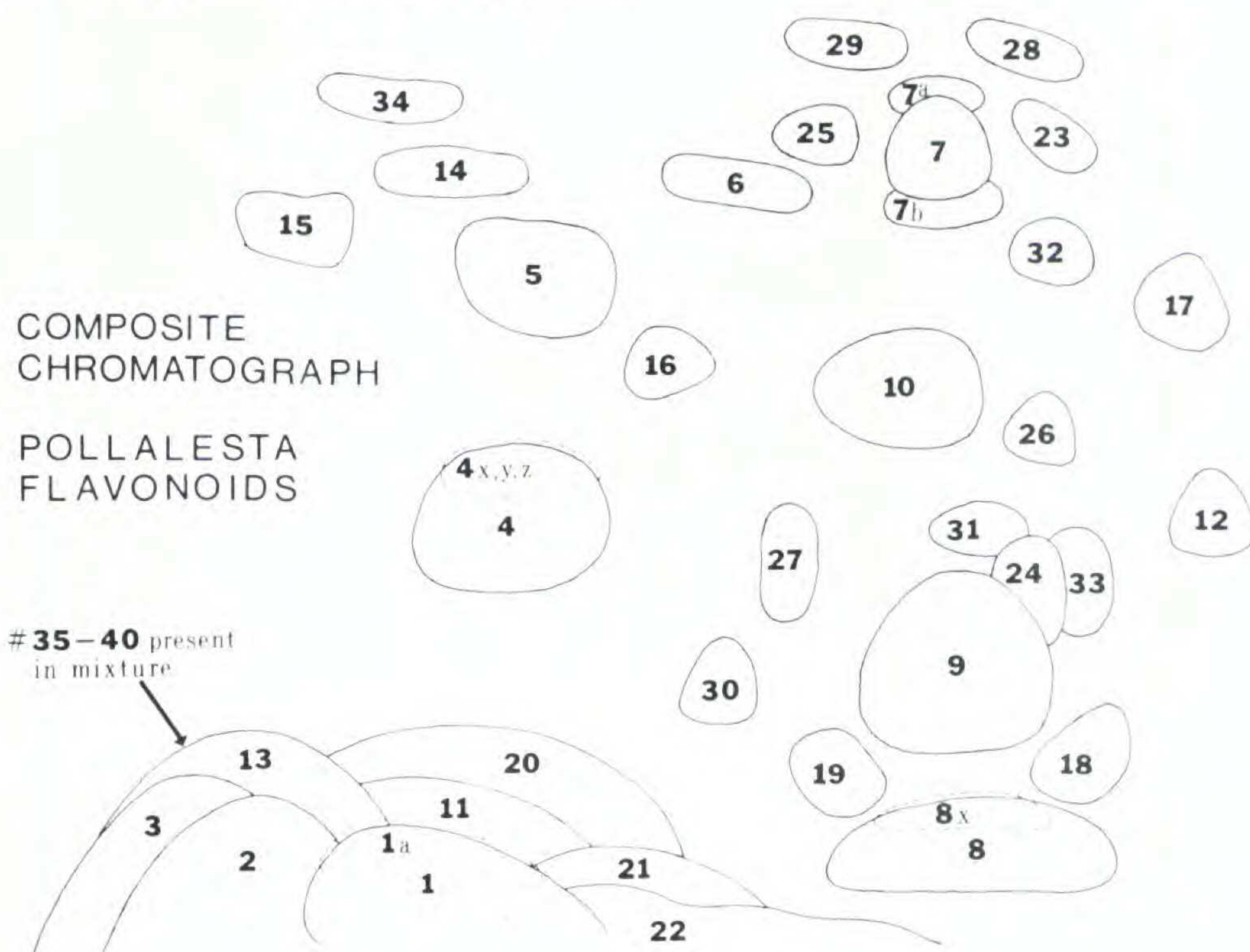


Figure 3. Composite chromatograph of *Pollalesta* leaf flavonoids. (See Tables 1-3 for information concerning each compound.)

A total of forty-seven compounds were separated as discrete spots on paper chromatograms, of which eighteen were tentatively identified on the basis of their spectral properties, R_f values, and color properties (Mabry et al, 1970; Giannasi, 1975; Abdel-Baset, 1973). Due to the small amounts of material available several other compounds were determined only to class; i.e., either flavones or flavonols.

A composite chromatograph of all flavonoids in the taxa examined is given in Figure 3. Spectral data, R_f values, color properties, and tentative identities of the various compounds are recorded in Tables 1 & 2.

Although only eighteen of the forty-seven compounds present were identified, it is possible to draw some systematic conclusions based on structural identification of flavonoids within *Pollalesta*. The various species can be distinguished on the basis of their overall spot patterns and most possess species-specific compounds (Table 3).

Infragenerically, there are differences between the three subgenera in overall number of flavonoid compounds. Subgenus *Odontoloma*, whose species exhibit a trend toward reduction in overall head size, number of florets per head, and pappus, also shows a reduction in overall number of flavonoid compounds as compared to the other two subgenera. The average number of flavonoid compounds per species in subgenus *Odontoloma* is eleven, subgenus *Pollalesta* fourteen, subgenus *Dialesta* twenty-one. Subgenus *Dialesta*, as delimited in this study, is composed of only one species, *Pollalesta discolor* (H.B.K.) Aristeg., which is highly variable in its vegetative morphology. Flavonoid variation within *P. discolor* was equally extensive but apparently not correlated with morphological or geographical data and thus its flavonoid profile represents a composite complement. This phenomenon has been

Table 1. R_f Values, Color Properties, and Identities of Leaf Flavonoids of *Pollalesta*.

Spot No.	Identity	R_f Values		Color	
		TBA	HOAc	UV	UV+NH ₃
1	Q	.69	.08	Y	Y
1a	Q-4'-methyl ether (?)	.68	.11	Y	Y
2	L	.79	.10	P	Y
3	Q-3-methyl ether	.84	.13	P	Y
4	L-6, 8-C-diglycoside*	.61	.46	P	Y
4x	unknown	.61	NA	P	Y

Table 1. *R_f* Values, Color Properties, and Identities of Leaf Flavonoids of *Pollalesta*.

Spot No.	Identity	<i>R_f</i> Values		Color	
		TBA	HOAc	UV	UV+NH ₃
4y	unknown	.61	NA	P	NA
4z	unknown	.61	NA	P	NA
5	Q-3-0-glucoside**	.60	.66	P	Y
6	Q-3-0-glycoside	.49	.76	P	Y
7	A-6,8-C-diglycoside*	.36	.79	P	Y
7a	unknown	.36	.84	Y	Y
7b	unknown	.36	.73	P	Y
8	L-7-0-glycoside	.33	.11	P	Y
8x	L-7-0-glycoside	.33	.15	P	Y
9	L-7-0-glucoside**	.33	.31	P	Y
10	Q-3-0-glycoside	.34	.56	P	Y
11	unknown	.67	.14	P	Y
12	unknown	.15	.48	P	Y
13	unknown	.80	.19	P	Y
14	unknown	.66	.75	P	Y
15	unknown	.75	.69	P	P
16	unknown	.52	.58	P	Y
17	Q-3,7-0-diglycoside	.16	.66	P	Y
18	unknown	.25	.19	Y	Y
19	undetermined methylated Q-glycoside	.42	.20	YO	YO
20	unknown	.64	.19	P	Y
21	unknown	.54	.11	P	Y
22	undetermined phenolic acid	.50	.06	LB	LB
23	unknown	.27	.79	P	Y
24	unknown	.24	.37	YO	YO
25	unknown	.43	.82	P	Y
26	unknown	.24	.51	P	Y
27	K-4'-0-glycoside-5,7-dimethyl ether	.43	.39	YO	YO
28	unknown	.28	.88	P	Y
29	unknown	.39	.90	P	Y
30	unknown	.50	.29	P	Y
31	unknown	.30	.43	P	Y
32	unknown	.27	.68	P	Y
33	unknown	.20	.39	P	Y
34	unknown	.68	.85	P	Y
35	L-3'-methyl ether (Chrysoeriol)	.70	NA	P	Y
36	Q-3,3'-dimethyl ether	.80	NA	P	Y
37	Q-3,7,4'-trimethyl ether (?)	.75	NA	P	Y
38	Q-3,3',4'-trimethyl ether (?)	.75	NA	P	Y
39	undetermined methylated flavone	.75	NA	P	Y
40	undetermined methylated flavone	.75	NA	P	Y

A = apigenin, L = luteolin, K = kaempferol, Q = quercetin, P = purple, Y = yellow, YO = yellow-orange, LB = light blue, NA = not available, * = confirmed by acid hydrolysis, ** = confirmed by enzyme hydrolysis.

Table 2. Spectral Data for *Pollalesta* Leaf Flavonoids.

Spot #	MeOH	+AlCl ₃	+AlCl ₃ / HCl	+NaOMe	+NaOAc	+NaOAc/ H ₃ BO ₃
1	372	448	427	DEC.	389	460s
	294	325	368	407	327	386
	258	271	304s	335	268	261
			268		260s	
1a	365	447	427	DEC.	DEC.	455s
	332	335	327	388	380	365
	270s	298s	300s	337	328	263
	255	272	270	273s	275	
					268s	
					255s	
2	352	427	392	407	397	433s
	293	332	370s	327	325	375
	268	302s	297s	270	269	263
	256	274	274			
			267			
3	359	439	405	410	397	450s
	300s	335	370s	326	325	378
	268s	304s	300	272	273	263
	257	277	269			
4	337	430	393	393	387	357
	300s	354	342	273	339s	300s
	267	301	298		270	262
	256	273	274			
5	356	437	405	409	380	375
	305s	340s	363	333	330	300
	268s	304s	302	274	273	263
	258	275	272			
6	348	437	407	406	385	370
	298s	364s	343	337s	328	300s
	268s	305s	300	273	273	263
	255	274	272			
7	332	388	385	401	392	410s
	273	355	350	338	340s	347
		308	304	285	308s	321
		282	278		283	276
			267s			
8	339	426	391	395	405s	363
	287	353	340	375s	347	260
	270	298s	297s	270	268s	
	253	272	275		257	
		263s	270			

Table 2. Spectral Data for *Pollalesta* Leaf Flavonoids.

Spot #	MeOH	+AlCl ₃	+AlCl ₃ / HCl	+NaOMe	+NaOAc	+NaOAc/ H ₃ BO ₃
8x	347	422	387	403	402	435s
	274s	273	360	273	352	365
	268s	267	273	268s	263	260
	263s		262	263		
	255					
9	353	432	393	405	404	423s
	268	333	367s	268	363	375
	257	300s	298s		269s	261
		275	271		259	
10	350	428	392	408	393	433s
	292s	340	362	338s	273	373
	268	302s	300s	278		265
	257	276	275			
17	347	423	393	413	393	435s
	273	365s	362	283	284s	378
	268	273	300s	273	273	275
	262s	268s	275	268s	268s	268
	256s	262s	264	262s	263s	263
18	352					
	285s					
	271s					
	256					
19	350	423	405	417	365	440s
	269s	350	353	278	269	366
	253	300s	298s		255	255
		270	267			
24	367					
	270s					
	255					
27	325	325	325	DEC.	DEC.	350s
	277	277	277	407s	350s	324
	258s	258s	258s	313s	322s	267
				287	273	
				256s		
35	351	413	383	402	366	437s
	293s	365s	362	330s	265	360
	268	299s	299s	269	257s	258
	253	268	274			
		253	267			
36	357	413	403	401	377	362
	300s	365s	363	338s	320s	260

Table 2. Spectral Data for *Pollalesta* Leaf Flavonoids.

Spot #	MeOH	+AlCl ₃	+AlCl ₃ / HCl	+NaOMe	+NaOAc	+NaOAc/ H ₃ BO ₃
	268s	300s	299	275	271	
	256	268s	274s			
		256	268			
37	352	396	399	358	355	358
	289s	354	355	267	268	305s
	266s	297	300	257s	257	262
	255	267	269			
38	353	398s	395	353	353	362
	302s	350	352	322s	268	299s
	265s	298s	300s	268		264
	258	268	268			
39	327	390s	393s	380	328	343
	293s	338	335	327s	275	263
	255	298s	298s	274	269	258
		274	274	268	263	
		268	263	263	258	
		263				
40	322	390s	390s	380	380s	350s
	293s	353s	353s	273	323s	298s
	255	325s	328s	267	274	268s
		273	298s	263	268	263s
		267	267		263	

DEC. = decomposed, s = shoulder or inflection.

documented in other taxa in the Compositae, e.g. *Dahlia coccinea* Cav. (Giannasi, 1975).

Structurally, the genus as a whole is characterized by a large number of flavonols compared to number of flavones, a character often considered to be primitive (Harborne, 1967; Giannasi, 1975). However, the fact that many of these flavonols are methylated at one or more positions suggests an advanced state of biosynthesis (Harborne, 1967; Giannasi, 1975). This phenomenon has been observed in a number of taxa in various tribes of the Compositae (Hegnauer, 1977).

Finally, similarities in flavonoid aglycones, as well as methoxylation and glycosylation patterns, between *Pollalesta* and other genera of the tribe such as *Piptocarpha* R. Br. (G. L. Smith, Univ. of

Ga., pers. comm.), *Piptocoma* Cass. (unpublished observations), and *Vernonia* Schreb. (Abdel-Baset, 1973; Mabry et al, 1975) suggest that flavonoids may well prove to be taxonomically valuable at the intergeneric level when enough genera in the tribe have been examined (Harborne, 1977).

MORPHOLOGY

A thorough study of variation was made of many characters to determine those most useful for the species taxonomy. These were, for example, number of florets per head, involucre shape, number of pappus series, and number of inner pappus bristles. Other characters, such as flower color, corolla length, number of pappus bristles, etc. were variable in some species and more or less constant in others. Characters such as leaf length, leaf width, etc. were generally too variable to be useful in the classification.

As a result of this study the total number of species in *Pollalesta* is reduced from twenty-four to sixteen, including three newly described species. Eight of the species are known only from one or a very few collections. Some species seem to form groups or complexes, the members of which are very similar and often extremely difficult to identify. One such assemblage is the *P. niceforoi*-*P. schomburgkii*-*P. macrophylla* complex. The lack of thorough collections of these taxa makes it difficult to interpret the situation basing decisions solely on morphology. However, in this case the chemical and habitat data suggest that these three taxa are indeed separate species.

Several species recognized in this treatment exhibit extensive morphological variation. This has previously led to the naming of several ill-defined species whose ranges of variation overlap considerably. The best example of this situation is *Pollalesta discolor*, the most wide ranging species in the genus. As treated in this study it includes nine other species recognized in previous treatments. In this case the chemical and habitat data do not support the previous treatments (summarized in Aristeguieta, 1963). At the present time our state of knowledge is so incomplete that it is not taxonomically sound to divide this species, or the other variable species in the genus, into less-inclusive taxonomic units. It seems advisable to retain a broader concept of species within *Pollalesta* until such time as new information becomes available.

Taxon	Unknowns (continued)															<i>PA</i>		
	Compound No.	15	16	18	20	21	23	24	25	26	28	29	30	31	32	33	34	22
Subgenus Dialesta :																		
<i>P. discolor</i>			X	X					X						X	X		
Subgenus Pollalesta :																		
<i>P. vernonioides</i>				X				X		X		X		X	X	X		
<i>P. niceforoi</i>																		
<i>P. areolata</i>					X	X												
<i>P. schomburgkii</i>		X	X															X
<i>P. roraimensis</i>			X	X	X		X				X	X					X	
<i>P. macrophylla</i>			X	X									X					
<i>P. milleri</i>																		
Subgenus Odontoloma :																		
<i>P. acuminata</i>																		
<i>P. hypochlora</i>																		
<i>P. Trujillensis</i>			X								X		X					
<i>P. barinensis</i>																		

K = kaempferol, Q = quercetin, A = apigenin, L = luteolin, PA = phenolic acid

TAXONOMIC TREATMENT

Pollalesta H.B.K., Nov. Gen. et Sp. 4: 46. 1820.

Odontoloma H.B.K., Nov. Gen. et Sp. 4: 43. 1820. TYPE: *O. acuminata* H.B.K.

Dialesta H.B.K., Nov. Gen. et Sp. 4: 45. 1820. TYPE: *D. discolor* H.B.K.

Adenocyclus Less., Linnaea 4: 337. 1829. TYPE: *A. condensatus* Less.

Oliganthes Cass. sensu Schultz-Bipontinus, Linnaea 20: 501. 1847, not Cass., Bull. Soc. Philom. Paris, Ser. 3, 4: 10. 1817, nor Bull. Soc. Philom. Paris, Ser. 3, 5: 57-58. 1818.

Trees or shrubs, usually diffusely branched, branches often tomentose. Leaves alternate, petiolate; blades lanceolate to ovate, usually elliptic, rounded to long-acuminate at the apex, attenuate to cordate, usually cuneate, occasionally oblique, at the base, becoming glabrous above, densely stellate or lanuginose to becoming glabrous below, punctate-glandular both above and below, margins entire to serrulate. Inflorescences terminal, corymbose-paniculate. Heads with 1-5 florets, pedunculate; involucre cylindric to narrowly campanulate; phyllaries 5-15(25), imbricate, in various series or distichous, membranous to scarious, acute at the apex; receptacle subconvex to flat, naked. Corollas tubular, 5-lobed, white to purple; stamens 5, anthers basally sagittate; style branches slender. Pappus variable, biseriate or rarely one or both series absent, straw-colored; inner series of 0-15 aristate bristles; outer series of distinct short squamelle or coroniform, rarely absent. Achenes obconic, 8-10 ribbed. TYPED SPECIES: *Pollalesta vernonioides* H.B.K.

KEY TO THE SUBGENERA AND SPECIES OF POLLALESTA

- a. Phyllaries distichous and imbricate; involucre narrowly campanulate (Subgenus *Dialesta*). 1. *P. discolor*.
- a. Phyllaries imbricate, arranged in various series, not distichous; involucre elliptic-cylindric to narrowly cylindric. b.
- b. Involucre narrowly cylindric; inner pappus of 0-4(6) bristles; heads with 1-2(3) florets (Subgenus *Odontoloma*). c.
- c. Pappus uniseriate (outer) or completely absent; inner pappus absent; heads with 1 floret. 5. *P. acuminata*.
- c. Pappus biseriate; inner pappus of 1-4(6) bristles; heads with 1-3 florets. d.
- d. Heads with 2-3 florets 2. *P. hypochlora*.

- d. Heads with 1(2) florets. e.
- e. Inner pappus of 1 bristle ca. 3.5 mm long, occasionally accompanied by 2-3 poorly developed bristles up to ca. 2.4 mm long; heads with 1 floret; achenes 1-1.2 mm long. 4. *P. barinensis*.
- e. Inner pappus of 1-4(6) bristles ca. 3-4 mm long; heads with 1(2) florets; achenes (1.2)1.4-2 mm long. f.
- f. Young stems ferruginose-tomentose; achenes 1.2-1.6 mm long; corollas ca. 5 mm long; leaves thinly stellate on the abaxial surface. 3. *P. trujillensis*.
- f. Young stems tomentose; achenes 1.5-2 mm long; corollas 5-6.3(8.4) mm long; leaves becoming glabrous on the abaxial surface except along the veins which are stellate. ... 2. *P. hypochlora*.
- b. Involucres elliptic-cylindric to cylindric; inner pappus of (4) 6-14 bristles; heads with 2-5 florets (Subgenus *Pollalesta*). g.
- g. Achenes glabrous. h.
- h. Heads with 2 florets; involucres 7-8.5 mm long; achenes 3-3.7 mm long. 6. *P. areolata*.
- h. Heads with (2)3-4(5) florets; involucres less than 7 mm long; achenes 2.5 mm or less long. i.
- i. Phyllaries 10-14(16). 14. *P. schomburgkii*.
- i. Phyllaries 22-25. 15. *P. faustiana*.
- g. Achenes thinly puberulent. j.
- j. Leaves thickly lanuginose and velvety to the touch on the abaxial surface; petioles and young stems thickly lanuginose. 9. *P. vernonioides*.
- j. Leaves stellate on the abaxial surface; petioles stellate; young stems stellate or tomentose. k.
- k. Leaves decidedly oblanceolate, rounded to obtuse at the apex; inner pappus of 4-5 bristles; heads with 2-3 florets. 7. *P. spruceana*.
- k. Leaves ovate-elliptic to lanceolate, acute to long-acuminate at the apex; inner pappus of (4)8-14 bristles; heads with (2)3-5 florets. l.
- l. Phyllaries 8-14, lanate; heads with 3-5 florets. 16. *P. milleri*.

1. Phyllaries 9–18, tomentose to essentially glabrous; heads with (2)3(4) florets. m.
- m. Phyllaries 9–10; involucre 6–7 mm long. 8. *P. roraimensis*.
- m. Phyllaries 11–18; involucre 6.5 mm or less long. n.
- n. Phyllaries 16–18. 12. *P. rarissima*.
- n. Phyllaries 11–15. o.
- o. Heads with 3 florets; phyllaries 11–12; leaf margins serrulate; leaves sparsely long-stalked stellate on the adaxial surface and along margins. 13. *P. neglecta*.
- o. Heads with (2)3–4 florets; phyllaries 11–15; leaf margins entire; leaves becoming glabrous on the adaxial surface and along margins. p.
- p. Achenes 2.5–3 mm long; abaxial surface of leaves silvery-gray; heads with (2)3–4 florets; inner pappus of (8)10–14 bristles. 11. *P. niceforoi*.
- p. Achenes ca. 2 mm long; abaxial surface of leaves buff-brown; heads with (2)3(4) florets; inner pappus of (4)8–12 bristles. 10. *P. macrophylla*.

Subgenus **Dialesta** (H.B.K.) Sch.-Bip., *Linnaea* **20**: 502. 1847.

Dialesta H.B.K., *Nov. Gen. et Sp. Pl.* **4**: 45. 1820.

1. **Pollalesta discolor** (H.B.K.) Aristeg., *Bol. Soc. Venez. Ci. Nat.* **23**(103): 275. 1963.

Dialesta discolor H.B.K., *Nov. Gen. et Sp.* **4**: 45. 1820. TYPE: Colombia: Honda, *Bonpland s.n.* (HOLOTYPE, P, as IDC microfiche!, as photo, GH!; ISOTYPE, B, as photo GH!).

Eupatorium cuspidatum Willd. ex Less., *Linnaea* **4**: 315. 1829. TYPE: *Willd. Herb. n. 15156* (HOLOTYPE, B, as IDC microfiche!).

Oliganthes discolor (H.B.K.) Sch.-Bip., *Linnaea* **20**: 502. 1847.

Oliganthes karstenii Sch.-Bip., *Linnaea* **30**: 116. 1859–1860. TYPE: Colombia. Depto. Cundinamarca; Guaduas, *Karsten s.n.* (ISOTYPE, F!).

Oliganthes ferruginea Gleas., *N. Am. Fl.* **33**: 102. 1922. TYPE: Costa Rica. Forests of Alto de Mano Tigre, Diquis Valley, *Pittier 12138* (HOLOTYPE, US!).

- Oliganthes corei* Cuatrec., *Brittonia* 8: 185. 1956. TYPE: Colombia. Depto. Antioquia; El Radio, *Core* 720 (HOLOTYPE, WVA!, as photo GH!, NY!; ISOTYPE, US!).
- Pollalesta argentia* Aristeg., *Bol. Soc. Venez. Ci. Nat.* 23(103): 275. 1963. TYPE: Peru. Depto. Cajamarca: Valle del Rio Tabaconas, *Weberbauer* 6162 (HOLOTYPE, F!; ISOTYPES, GH!, US!).
- Pollalesta brasiliiana* Aristeg., *Bol. Soc. Venez. Ci. Nat.* 23(103): 280. 1963. TYPE: Brazil. Edo. Amazonas: Sao Paulo de Olivencia, *Duke* 398 (HOLOTYPE, NY!; ISOTYPE, MO!).
- Pollalesta colombiana* Aristeg., *Bol. Soc. Venez. Ci. Nat.* 23(103): 274. 1963. TYPE: Colombia: Depto. Meta: Villavicencio, *Pennell* 1406 (HOLOTYPE, NY!; ISOTYPES, GH!, US!).
- Pollalesta corei* (Cuatrec.) Aristeg., *Bol. Soc. Venez. Ci. Nat.* 23(103): 276. 1963.
- Pollalesta ecuatoriana* Aristeg., *Bol. Soc. Venez. Ci. Nat.* 23(103): 277. 1963. TYPE: Ecuador. Napo-Pastaza Prov.; Cerca de Puyo, *Skutch* 4428 (HOLOTYPE, NY!; ISOTYPE, MO!).
- Pollalesta ferruginea* (Gleas.) Aristeg., *Bol. Soc. Venez. Ci. Nat.* 23(103): 273. 1963.
- Pollalesta karstenii* (Sch.-Bip.) Aristeg., *Bol. Soc. Venez. Ci. Nat.* 23(103): 273. 1963.
- Pollalesta klugii* Aristeg., *Bol. Soc. Venez. Ci. Nat.* 23(103): 278. 1963. TYPE: Peru: Depto. Loreto: Fortaleza, cerca de Yurimaguas, *Klug* 2819 (HOLOTYPE, GH!; ISOTYPE, MO!).
- Pollesta peruviana* Aristeg., *Bol. Soc. Venez. Ci. Nat.* 23(103): 277. 1963. TYPE: Peru. Depto. Loerto; Mishuyaca, cerca de Iquitos, *Klug* 1242 (HOLOTYPE, F!).

Tree, 10–30 m tall, young stems stellate-pubescent, brownish to grayish. Leaves somewhat crowded at tips of stems; petioles stellate-pubescent, 1–3.5 cm long; blades elliptic to lanceolate or ovate, 5–20 cm long, 1.5–9 cm wide, length/width ratio ca. 2.5, acute to long-acuminate at the apex, cuneate to oblique at the base, becoming glabrate above, densely stellate to rarely glabrescent below, margins entire to remotely serrate. Heads with (1)2(3) florets; involucre narrowly campanulate, (4.5)5–7.5(9) mm long; phyllaries (5)7–9(11), distichous, glabrous to thinly pubescent, glandular-dotted near the apex. Corollas 5.5–7.5 mm long, white to light purple, glandular-dotted; tube 1.2–1.6 times as long as the lobes. Pappus biseriate; inner series of 2–8 aristate bristles ca. 3–4.5 mm long; outer series minute to 1.2 mm long at longest point. Achenes 1.8–2.4 mm long, glandular-dotted, glabrous to thinly pubescent.

This species occurs from Costa Rica into Peru in tropical forest or secondary vegetation up to ca. 1,600 m elevation. Flowering and

fruiting occur throughout the year but most frequently from December to March.

REPRESENTATIVE SPECIMENS: **Costa Rica.** SAN JOSE PROV., Between San Isidros and Rivas, General Valley, *Burger & Liesner 7063* (MO, NY, US); PUNTARENAS PROV., Forests of Buenos Aires, *Pittier 4910* (GH). **Panama:** CHIRIQUI PROV., Cerro Vaca, *Pittier 5328* (US); VERAGUAS PROV., Hills W of Sona, *Allen 1036* (F, GH, US); PANAMA PROV., Canal Zone, Ft. Clayton, U.S. Army Tropical Test Center, *Tyson 6433* (MO, UGA, US); DARIEN PROV., W ridge of Cerro Mali, near Rio Pucuro Valley, *Gentry & Mori 13835* (MO). **Colombia:** DEPTO. CHOCO, Rio Atrato above Quibdo, Sabuidero, *Cuatrecasas & Llana 24071* (US); DEPTO. ANTIOQUIA, Rio Verde de las Montes, Sonson, Plya Rica, *Gutierrez 35644* (UC); DEPTO. SANTANDER, Lebrija, *Molina 380* (LP); DEPTO. CUNDINAMARCA, Icononzo, *Pennell 2764* (GH, NY, US); DEPTO. BOYACA, El Umbo region, near Mt. Chapon, *Lawrence 510* (F, GH, K, MO, NY, S); DEPTO. VALLE, Costa de Pacifico, Rio Yurumangui, 5–50 m elev., *Cuatrecasas 15954* (F, US); DEPTO. TOLIMA, Chicoral, *Haught 6259* (GH, NY, UC, US); DEPTO. META: Intendencia del Meta, La Serrania, Rio Meta, *Cuatrecasas 7784* (F); DEPTO. NARIÑO, Comisaria del Rio Putumayo, near Umbria, *Klug 1924* (F, GH, MO, NY, S, US). **Ecuador.** ESMERALDAS PROV., Tobar Donoso, junct. of Rio San Juan and Rio Camumbi, *Jativa & Epling 1120* (NY, US); NAPO-PASTAZA PROV., Vicinity of Puyo, *Skutch 4428* (K, NY, US). **Peru:** DEPTO. LORETO, Florida, Rio Putumayo at mouth of Rio Zubineta, *Klug 2220* (BM, F, GH, MO, NY, S, US); DEPTO. AMAZONAS: Rio Cenepa, *Ancuash 302* (MO); DEPTO. CAJAMARCA, Valle del Rio Tabaconas, *Weberbauer 6162* (F, GH, US); DEPTO. SAN MARTIN: Maynas, *Poeppig 2190* (F, GH, NY).

Subgenus **Odontoloma** (H.B.K.) Sch.-Bip., *Linnaea* **20**: 502. 1847.

Odontoloma H.B.K., *Nov. Gen. et Sp. Pl.* **4**: 43. 1820.

Adenocyclus Less., *Linnaea* **4**: 337–338. 1829.

Oliganthes Cass. subgenus *Adenocyclus* (Less.) Sch.-Bip., *Linnaea* **20**: 501. 1847.

2. **Pollalesta hypochlora** (Blake) Aristeg., *Bol. Soc. Venez. Ci. Nat.* **23**(103): 280–281. 1963.

Oliganthes hypochlora Blake, *Contr. U.S. Natl. Herb.* **20**: 533. 1924. TYPE: Venezuela: Edo. Carabobo: Near Valencia, vicinity of Las Trincheras, *Pittier 8185* (HOLOTYPE, US!; ISOTYPE, GH!).

Tree or shrub, 2–12 m tall, young stems tomentose. Petioles stellate pubescent, 1–2.5 cm long; leaf blades lanceolate to elliptic, 8–20 cm long, 3–9.5 cm wide, length/width ratio ca. 2.3, long-acuminate to acuminate at the apex, cuneate to rounded, occasionally oblique, at the base, becoming glabrous above, becoming glabrous below except along the veins which remain stellate, margins entire to rarely subserrulate. Heads with (1)2–3 florets;

involucres cylindric, 4.5–6(7.2) mm long; phyllaries 9–14, glabrous to villous along margins, lower phyllaries occasionally tomentose, glandular-dotted near the apex. Corollas 5–6.3(8.4) mm long, white to light purple, glandular-dotted; tube (1.3) 1.6(2) times as long as the lobes. Pappus biseriate; inner series of 1–4(6) bristles ca. 3–4 mm long; outer series coroniform, ca. 0.3–1.5 mm long at longest point. Achenes 1.5–2 mm long, glandular-dotted, glabrous.

This species occurs in northern Venezuela and Trinidad on dry sites in scrub woodland or forest between ca. 250–1,000 m elevation. Flowering and fruiting occur throughout the year but most frequently from December to March.

REPRESENTATIVE SPECIMENS: **Venezuela:** EDO. CARABOBO, Near Valencia, vicinity of Las Trincheras, *Pittier 8185* (GH, US); EDO. ARAGUA, Near de Yuma, *Williams 10348* (F, US); DTO. FED., Between Caracas and La Guayra, *Fendler 667* (GH, MO); EDO. MIRANDA, Road to Ocumare, National Park, *Garcia 5* (US). **Trinidad:** Mt. St. Benedict, *Broadway 7738* (BM, MO, S).

3. ***Pollalesta trujillensis*** Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 281–282. 1963. TYPE: Venezuela: Edo. Trujillo: Cerca de Valera, Loma Moron, *Pittier 10732* (HOLOTYPE, VEN; ISOTYPES, B!, GH!, K!, NY!, US!).

Small tree or shrub, 3–7 m tall, young stems ferruginose-tomentose. Petioles ferruginose-tomentose, 1–2.2 cm long; leaf blades ovate to elliptic-lanceolate, 7–15 cm long, 3.5–7 cm wide, length/width ratio ca. 2.1, long-acuminate to acute at the apex, cuneate to rounded at the base, becoming essentially glabrous above but usually retaining a few scattered stellate trichomes, stellate below but becoming less so with age, margins entire. Heads with 1(2) florets; involucres narrowly cylindric, 5–6 mm long; phyllaries 8–12, glabrous to villous along margins, lower phyllaries occasionally tomentose. Corollas ca. 5 mm long, white to light purple, glandular-dotted; tube ca. 1.5 times as long as the lobes. Pappus biseriate; inner series of 1–4(6) bristles ca. 3 mm long; outer series coroniform, ca. 0.4–1.2 mm long at longest point. Achenes (1.2)1.4–1.6 mm long, glandular-dotted, glabrous.

This species is known to occur only in the state of Trujillo in northwestern Venezuela on dry sites in sparsely wooded areas at

elevations of ca. 1,500 m. Flowering and fruiting occur throughout the year but most frequently from December to March.

REPRESENTATIVE SPECIMENS: **Venezuela.** Edo. Trujillo, Near Escuque, *Pittier 13139* (F, GH, M, MO, NY).

4. **Pollalesta barinensis** Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 282. 1963. TYPE: Venezuela. Edo. Barinas, Near Barinas, *Aristeguieta 3256* (HOLOTYPE, VEN; ISOTYPE, NY!).

Shrub, ca. 4 m tall, young stems tomentose. Petioles tomentose with few scattered stellate trichomes, 1–2 cm long; leaf blades lanceolate to elliptic-lanceolate, 10–14 cm long, 3.5–6 cm wide, length/width ratio ca. 2.6, acuminate at the apex, cuneate at the base, thinly tomentose above, stellate along major veins and thinly tomentose on the blade below, margins entire. Heads with 1 floret; involucre narrowly cylindric, 5–5.2 mm long; phyllaries 11–13, glabrous or occasionally lower phyllaries tomentose. Corollas ca. 5.5 mm long, white, glandular-dotted; tube ca. 1.5 times as long as the lobes. Pappus biseriate; inner series of 1 bristle ca. 3.5 mm long, rarely accompanied by 2–3 poorly developed bristles up to ca. 2.4 mm long; outer series coroniform, ca. 0.45–0.8 mm long at longest point. Achenes 1–1.2 mm long, thinly glandular-dotted, glabrous.

This species is known only from the type collection. Times of flowering and fruiting are not known.

5. **Pollalesta acuminata** (H.B.K.) Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 282–283. 1963.

Odontoloma acuminata H.B.K., Nov. Gen. et Sp. **4**: 44. 1820. TYPE: Venezuela:

Cresit in Convalli Caracasana, *Humboldt & Bonpland s.n.* (HOLOTYPE, P).

Adenocyclus condensatus Less., Linnaea **4**: 337–338. 1829. TYPE: Trinidad:

Sieber 17 (HOLOTYPE, P, as photo, GH!; ISOTYPES BM!, G!, K!, M!, MO!, NY!).

Oliganthes acuminata (H.B.K.) Sch.-Bip., Linnaea **20**: 502. 1847.

Oliganthes condensata (Less.) Sch.-Bip., Linnaea **20**: 501. 1847.

Pollalesta condensata (Less.) Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 283–285. 1963.

Small tree or shrub, 2–15 m tall, young stems stellate-pubescent. Petioles stellate-pubescent, 1–3.5 cm long; leaf blades lanceolate to elliptic, 8–20(27) cm long, 3–11 cm wide, length/width ratio ca. 2.4,

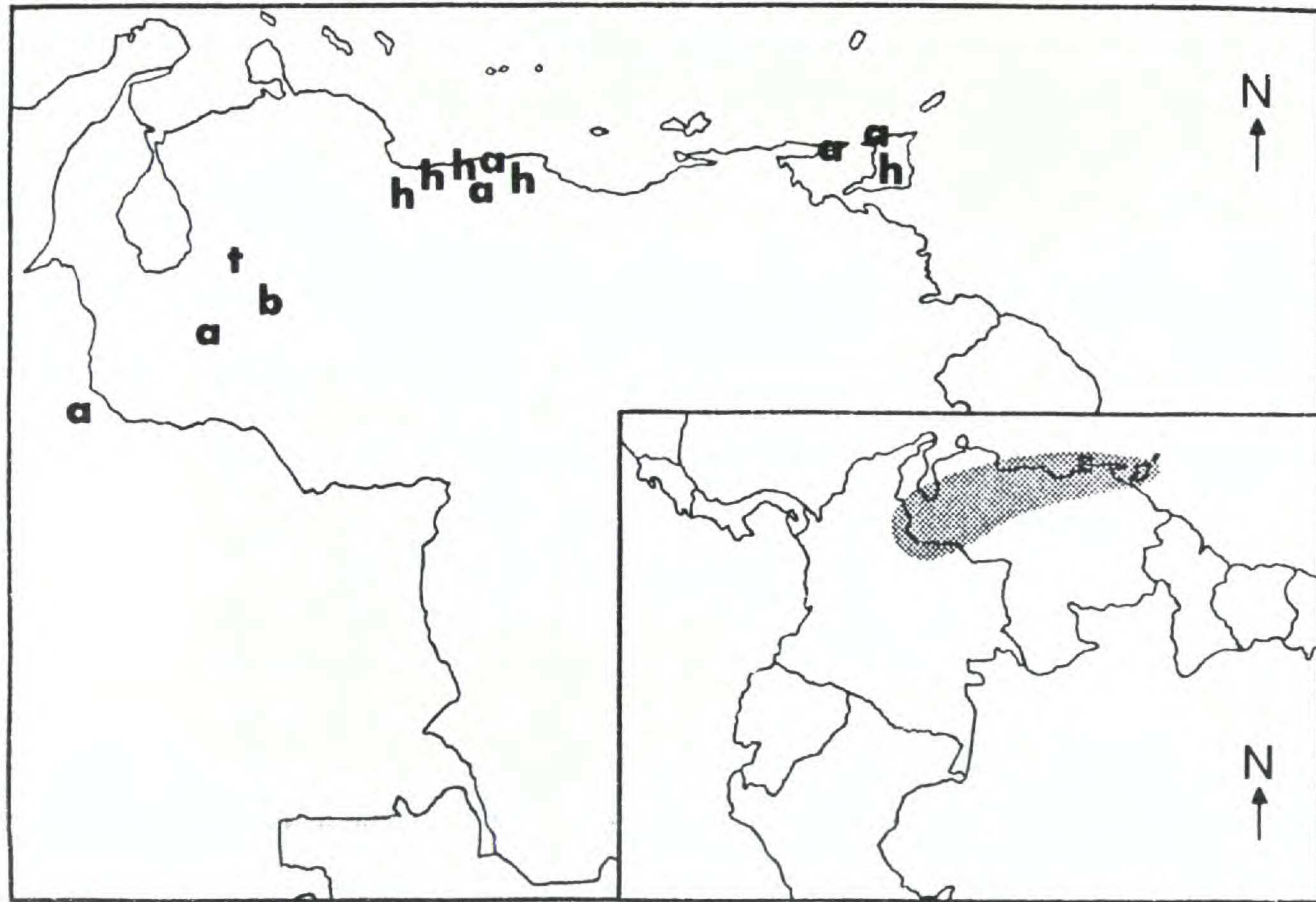


Figure 4. **Distribution of *Pollalesta*, subgenus *Odontoloma*:** Shaded area of inset map represents the distribution of the subgenus; species on large map are **b** = *P. barinensis*, **t** = *P. trujillensis*, **a** = *P. acuminata*, & **h** = *P. hypochlora*

long-acuminate to acute at the apex, cuneate to rounded, occasionally oblique, at the base, becoming glabrous above, becoming glabrous below except along the veins which remain stellate, margins entire. Heads with 1 floret; involucre narrowly cylindric, 4–6 mm long; phyllaries 7–11, glabrous or occasionally lower phyllaries tomentose. Corollas 4–6 mm long, white, glandular-dotted; tube ca. 1.5 times as long as the lobes. Pappus uniseriate (outer) or completely absent; inner series completely absent; outer series up to ca. 1.7 mm long at longest point or rarely completely absent. Achenes 1.5–2 mm long, thinly glandular-dotted, glabrous.

This species occurs from Trinidad and northern Venezuela westward into extreme eastern Colombia in forest or areas of secondary vegetation up to ca. 1,500 m elevation. Flowering and fruiting occur throughout the year but most frequently from December to March.

REPRESENTATIVE SPECIMENS: **Colombia.** DEPTO. NORTE DE SANTANDER, Cordillera Oriental, region del Sarare, Hoya del Rio Chitaga entre Chorro Colorado y Bata, Cuatrecasas, Schultes, & Smith 12214 (F, GH, US). **Venezuela:** EDO. BARINAS, Ticoporo Forest Reserve, ca. 80 km SW of Barinas along road to San Cristobal, bank of Bumhun river, Breteler 4604 (MO, SP); DTO. FED., Old road from Caracas to La Guayra, Alston 5501 (BM, GH, S, US); EDO. MIRANDA, Siquire Valley, Guinand Estate, Pittier 5994 (MO, US); EDO. SUCRE, Near Aricagua, vicinity of Cristobal Colon, Broadway 424 (GH, NY, US). **Trinidad:** Botanic Gardens, Look-out hill, Broadway 7404 (BM, K, MO, S).

Subgenus **Pollalesta**

Oliganthes Cass. subgenus *Euoliganthes* Sch.-Bip., Linnaea 20: 502. 1847.

Pollalesta H.B.K. subgenus *Eupollalesta* Aristeg., Bol. Soc. Venez. Ci. Nat. 23(103): 260. 1963.

6. **Pollalesta areolata** (Wurdack) Aristeg., Bol. Soc. Venez. Ci. Nat. 23(103): 270. 1963.

Oliganthes areolata Wurdack, Mem. New York Bot. Gard. 8(2): 144. 1953.

TYPE: Venezuela. Terr. Fed. Amazonas, Cerro Sipapo, east-central drainage, 1,800 m elevation, Maguire & Politi 28366 HOLOTYPE, NY!; ISOTYPE, US!).

Small tree or shrub, ca. 8 m tall, young stems stellate-pubescent. Petioles densely stellate-pubescent, 1–2.5 cm long; leaf blades elliptic-lanceolate, 9–14 cm long, 3–4.5 cm wide, length/width ratio

ca. 3.2, acuminate at the apex, attenuate at the base, glabrous above, densely subsessile-stellate below, margins serrulate to entire. Heads with 2 florets; involucre cylindric, 7–8.5 mm long; phyllaries 9–15, tomentulose to glabrous. Corollas 4.5–6.5 mm long, white, glandular-dotted; tube essentially equal in length to the lobes. Pappus biseriate; inner series of 6–10 bristles ca. 5–5.6 mm long; outer series of distinct lacinate squamelle ca. 0.5–1.2 mm long at longest point. Achenes 3–3.7 mm long, glandular-dotted, glabrous.

This species is known to occur only near the type locality in forest between ca. 1,500–2,000 m elevation. Times of flowering and fruiting are not known.

REPRESENTATIVE SPECIMENS: **Venezuela:** TERR. FED. AMAZONAS, Cerro Sipapo, Cano Profundo, vicinity of Cano Negro, *Maguire & Politi* 28272 (BM, K, NY).

7. ***Pollalesta spruceana*** (Benth.) Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 270–271. 1963.

Oliganthes spruceana Benth., Benth. & Hook. Gen. Pl. **2**: 233. 1873. TYPE: Venezuela: Terr. Fed. Amazonas: Rio Atabapo, near Maypures, *Spruce* 3705 (HOLOTYPE, K!; ISOTYPES, as fragment F!, P, as photo GH!).

Tree or shrub, range of height uncertain, young stems stellate-pubescent. Petioles stellate-pubescent, ca. 0.5 cm long; leaf blades oblanceolate, 3–6 cm long, 1–2 cm wide, length/width ratio ca. 3.3, rounded to obtuse at the apex, attenuate to subcuneate at the base, becoming glabrous above, densely stellate below, margins entire. Heads with 2–3 florets; involucre cylindric, ca. 5 mm long; phyllaries ca. 9, tomentose to essentially glabrous. Corollas ca. 4 mm long, white, glandular-dotted; tube ca. 0.75 times as long as the lobes. Pappus biseriate; inner series of ca. 4–5 bristles ca. 3–4 mm long; outer series of distinct lacinate squamelle ca. 0.3–1.2 mm long at longest point. Achenes ca. 2.2 mm long, thinly puberulent.

This species is known only from the type collection. Times of flowering and fruiting are not known.

8. **Pollalesta roraimensis** (Steerm.) Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 271. 1963.

Oliganthes roraimensis Steerm., Fieldiana, Bot. **28**: 662–663. 1953. TYPE: Venezuela. Edo. Bolivar, Mt. Roraima, near Rondon Camp, forested SW-facing quebrada, *Steermark 58678* (HOLOTYPE, F!; ISOTYPE, NY!).

Shrub, 1–5 m tall, young stems stellate-pubescent. Leaves somewhat crowded near ends of stems; petioles densely appressed stellate-pubescent, 1–1.5 cm long; leaf blades oblong-elliptic to elliptic-lanceolate, 3.5–8 cm long, 1–3.2 cm wide, length/width ratio ca. 3, acuminate to acute at the apex, subcuneate at the base, glabrous above, densely subsessile stellate below, margins entire. Heads with 3 florets; involucre cylindric, 6–7 mm long; phyllaries 9–10, thinly puberulent near apex and along margins. Corollas ca. 4.5 mm long, white, glandular-dotted; tube essentially equal in length to the lobes. Pappus biseriate; inner series of 8–12 bristles ca. 3.9–4.2 mm long; outer series of distinct lacinate squamelle 0.2–1 mm long at longest point. Achenes ca. 2.5 mm long, glandular-dotted, thinly puberulent apically.

This species is known to occur only on the forested upper slopes of Mt. Roraima at ca. 2,000 m elevation. Times of flowering and fruiting are not known.

REPRESENTATIVE SPECIMEN: **Venezuela**. EDO. BOLIVAR, Mt. Roraima, *Ule 8794* (K).

9. **Pollalesta vernonioides** H.B.K., Nov. Gen. et Sp. **4**: 47. 1820. TYPE: Venezuela: Edo. Sucre: Cresit in temperatis Provinciae Novae Andalusiae juxta Caripe et El Purgatorio, *Bonpland 239* (HOLOTYPE, P, as IDC microfiche!, as fragment F!, as photo GH!).

Oliganthes triflora Cass. sensu Schultz-Bipontinus, Linnaea **20**: 504, 1847, not Cass., Bull. Soc. Philom. Paris, Ser. 3, **5**: 57–58. 1818.

Oliganthes vernonioides (Kunth) Mattf., Notizbl. Bot. Gart. Berlin-Dahlem **12**: 687–688. 1935.

Tree or shrub, 3–15 m tall, young stems thickly lanuginose. Petioles thickly lanuginose with scattered subsessile stellate trichomes, 2–4 cm long; leaf blades ovate-elliptic, 10–20 cm long, 6–10 cm wide, length/width ratio ca. 1.7, acute to acuminate at the apex, cuneate at the base, becoming essentially glabrous above, thickly

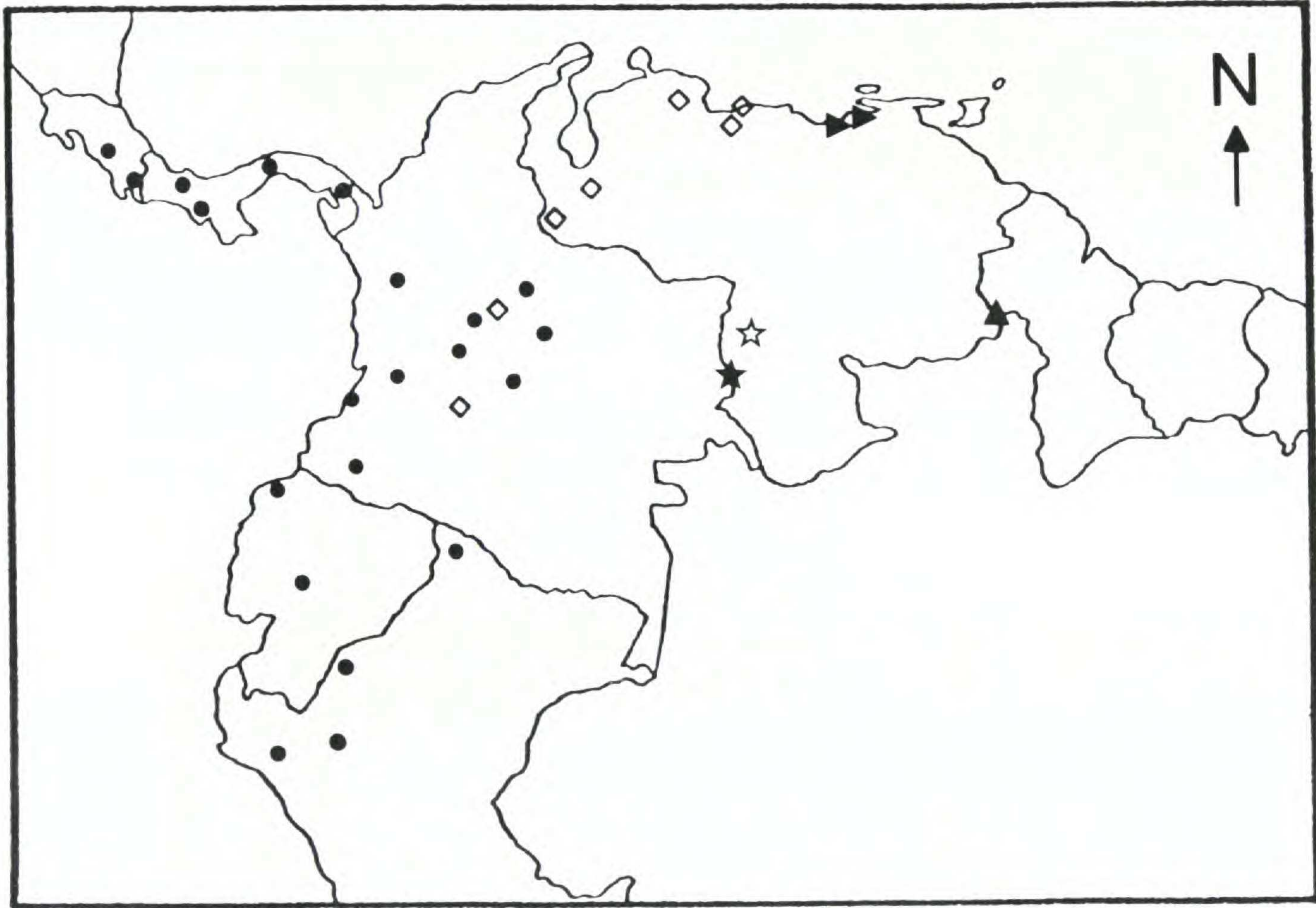


Figure 5. Distribution of *Pollalesta*: ● = *P. discolor*, ◇ = *P. niceforoi*, ☆ = *P. spruceana*, ★ = *P. areolata*, ▶ = *P. vernonioides*, ▲ = *P. roraimensis*

lanuginose with few stellate trichomes and velvety to the touch below, margins entire. Heads with 3–4 florets; involucre widely elliptic-cylindric, 6–7.2 mm long; phyllaries 14–16, thinly tomentose to essentially glabrous. Corollas ca. 5 mm long, white, glandular-dotted; tube ca. 1.3 times as long as the lobes. Pappus biseriate; inner series of 8–10 bristles ca. 3.6–5.2 mm long; outer series of distinct lanceolate fimbriate squamelle ca. 1.2–2.4 mm long at longest point. Achenes ca. 3 mm long, glandular-dotted, thinly puberulent.

This species is known to occur only in the states of Anzoategui and Sucre in northern Venezuela in cloud forest between ca. 1,800–2,400 m elevation. Flowering and fruiting occur throughout the year but most frequently from December to March.

REPRESENTATIVE SPECIMENS. **Venezuela:** EDO. ANZOATEGUI, Cerro Peonia, above Santa Cruz, headwaters of Rio Manantiales, E of Bergantin, SW-facing slope, *Steysmark 61603* (F, K, NY); EDO. SUCRE, Cerro Turumuquire, between headwaters of Rio Colorado and summit of S peak, *Steysmark 62636* (F, NY, VEN).

10. **Pollalesta macrophylla** (Sch.-Bip.) Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 266–267. 1963.

Oliganthes macrophylla Sch.-Bip., *Linnaea* **20**: 503–504. 1847. TYPE: Venezuela: Dto. Fed., Galipan, *Moritz 1358* (HOLOTYPE, B, as photo GH!; ISOTYPE BM!).

Pollalesta lilacea Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 267. 1963. TYPE: Colombia: Depto. Santander: Cordillera Oriental, alta cuenca del Rio Pienta, entre El Limite y Encino, *Cuatrecasas 10436* (Holotype US!; Isotype F!).

Tree or shrub, 2–12 m tall, young stems stellate-pubescent. Petioles densely stellate-pubescent, occasionally with scattered straight trichomes, 2–5.5 cm long; leaf blades elliptic to ovate-elliptic, (6)10–20 (25) cm long, 4–11 cm wide, length/width ratio ca. 2.3, acute at the apex, cuneate, occasionally oblique, at the base, becoming glabrous above, densely stellate and buff-brown in color below, margins entire. Heads with (2)3(4) florets; involucre cylindric, (4)5–6 mm long; phyllaries 11–15, tomentose and glandular-dotted near the apex. Corollas 4.5–6.5 mm long, white, glandular-dotted; tube ca. 1.3 times as long as the lobes. Pappus biseriate; inner series of (4)8–12 bristles ca. 3.4–4.3 mm long; outer series of distinct fimbriate squamelle ca. 0.3–2.1 mm long at longest

point. Achenes (1.8)2(2.3) mm long, glandular-dotted, thinly puberulent.

This species occurs in Colombia and Venezuela in forest and occasionally in savanna between ca. 1,000–2,200 m elevation. Flowering and fruiting occur throughout the year but most frequently from December to March.

REPRESENTATIVE SPECIMENS: **Colombia:** Depto. Santander, Cordillera Oriental, alta cuenca del Rio Pienta, entre El Limite y Encino, *Cuatrecasas 10436* (F, US). **Venezuela:** EDO. ARAGUA, Parque Nacional H. Pittier, on summit of La Mesa, above El Limon, *Steysmark 89859* (NY); DTO. FED, Cerro Naiguata, Lomas de Las Delicias, entre Quebrada de Basenilla y Quebrada Guayoyo, 9–12 km SE de Hacienda de Cocuizal, *Steysmark 91952* (NY, VEN).

11. ***Pollalesta niceforoi*** (Cuatrec.) Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 267–268. 1963.

Oliganthes niceforoi Cuatrec., Revista Acad. Colomb. Ci. Exact. **9**: 243. 1954.

TYPE: Colombia: Depto. Norte De Santander, Rio Zulia, *Niceforo 35* (Holotype F!, as photo NY!).

Small tree or shrub, 2–8 m tall, young stems stellate-pubescent. Petioles densely stellate-pubescent, occasionally with scattered straight trichomes, 1–2.5 cm long; leaf blades elliptic to occasionally lanceolate, (5)8–14 cm long, (1.5)2.5–6(10) cm wide, length/width ratio ca. 2.8, acute to acuminate at the apex, cuneate, often oblique at the base, becoming glabrous and often shiny above, densely stellate and silvery-gray in color below, margins entire. Heads with (2)3–4 florets; involucre cylindric, 4.2–5.2(6) mm long; phyllaries 11–15, tomentose and glandular-dotted near the apex. Corollas 4–5(6) mm long, white to purple, glandular-dotted; tube ca. 1.4 times as long as the lobes. Pappus biseriate; inner series of (8) 10–14 bristles ca. 3.3–4.4 mm long; outer series of distinct fimbriate squamelle ca. 0.2–1.8 mm long at longest point. Achenes 2.5–3 mm long, glandular-dotted, thinly puberulent.

This species occurs in Colombia and Venezuela on dry sites in sparsely wooded areas and savanna up to ca. 1,200 m elevation. Flowering and fruiting occur throughout the year but most frequently from December to March.

REPRESENTATIVE SPECIMENS: **Colombia:** DEPTO. HUILA, Cordillera Oriental, E of Neiva, open foot hills, *Pennell & Rusby 451* (GH, NY); DEPTO. SANTANDER, Cordillera Oriental, N slope of Mesa de los Santos, *Killip & Smith 15410* (GH, NY, US). **Venezuela:** EDO. TACHIRA: Along road from San Cristobal to San Antonio, *Aristeguieta & Montoya 2121* (F, VEN); EDO. MERIDA, Vicinity of Tovar, *Pittier 12802* (GH, M, NY, US, VEN); EDO. YARACUY, San Felipe-Nirgua, *Aristeguieta 1177* (VEN); EDO. CARABOBO, Hills of Guaremales, *Pittier 9399* (US); EDO. ARAGUA: Parque Nacional H. Pittier, SW-facing slope of mt., *Steyermark 89756* (VEN).

12. *Pollalesta rarissima* Stutts, *sp. nov.*

Frutex vel arbor, ca. 3-meteralis, caulibus tomentosis. Petioli ca. 2 cm longi; folia elliptica, 8.5–10 cm longa, 2.8–3.6 cm lata, longitudo cum latitudine ratione ca. 2.8, apicibus acutis, basibus cuneatis, supra glabrescentia, infra stellata-tomentose, marginibus integris. Capitula 3(4) flora; involucra cylindrica, 5–5.5 mm longa; phyllaria 16–18, imbricata, tomentulosa vel glabra. Corollae ca. 5–5.5 mm longae, albae, glandulosae; tubus cum lobis ratione ca. 1.6. Pappus biserialis; aristae interiores 8–12 elongatae lineares ca. 4 mm longae; aristae exteriores inaequales breves ca. 0.25 mm longae irregulariter lacinatae. Achaenia ca. 2 mm longa, tenuiter puberulentia et glandulosa. TYPUS: Venezuela, Edo. Tachira, Between La Muleta and Independencia, *Alston 7070* (HOLOTYPE, MO!; ISOTYPES, BM!, F!, GH!, NY!, S!, US!, VEN!).

This species is known only from the type collection. Times of flowering and fruiting are not known. This species can be distinguished from the related species *Pollalesta niceforoi* by its larger number of phyllaries per head and its smaller achenes.

13. *Pollalesta neglecta* Stutts, *sp. nov.*

Frutex, ca. 2.5-meteralis, caulibus tomentosis. Petioli ca. 1–2 cm longi; folia lanceolata, 10–18 cm longa, 4–8 cm lata, longitudo cum latitudine ratione ca. 2.5, apicibus acuminatis, basibus cuneatis, supra tenuiter stellata-tomentosa, infra conferta stellata-tomentosa, marginibus serrulatis et tenuiter stellata-tomentosa. Capitula 3 flora; involucra cylindrica, 4–5 mm longa; phyllaria 11–12, imbricata, tomentosa. Corollae 5–6 mm longae, albae, glandulosae; tubus cum lobis ratione ca. 1.2. Pappus biserialis; aristae interiores 8–12 elongatae lineares ca. 4 mm longae; aristae exteriores inaequales breves ca. 0.8–1.4 mm longae irregulariter lacinatae. Achaenia ca. 1.7–2 mm longa, tenuiter puberulentia et glandulosa.

TYPUS: Venezuela, Edo. Sucre, Peninsula de Paria, entre Cumana y Carupano, *Steyermark & Rabe 96443* (Holotype NY!).

This species is known only from the type collection. Times of flowering and fruiting are not known. This species can be distinguished from similar species by its having consistently 3 florets per head, 11–12 phyllaries per head, serrulate leaf margins, and long-stalked stellate trichomes thinly scattered on the adaxial surface and margins of the leaves.

14. ***Pollalesta schomburgkii*** (Sch.-Bip.) Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 269–270. 1963.

Oliganthes schomburgkii Sch.-Bip., *Linnaea* **20**: 504–505. 1847. TYPE: Guyana: Essequibo State, Mt. Roraima, *Schomburgk 921* (Holotype B, as photo GH!).

Small tree or shrub, 3–8 m tall, young stems tomentose. Petioles densely stellate-tomentose, 0.5–2.5 cm long; leaf blades lanceolate to elliptic, 6–18 cm long, 2–7 cm wide, length/width ratio ca. 3, acute to long acuminate at the apex, cuneate to attenuate at the base, becoming glabrous and often shiny above, densely stellate below, margins entire to rarely subserrulate. Heads with (2)3–4(5) florets; involucre cylindric to elliptic-cylindric, 4–6 mm long; phyllaries 10–14(16), glabrous or often tomentose near the apex and along the margins, glandular-dotted near the apex. Corollas 4–6 mm long, white to purple, glandular-dotted; tube ca. 1.3 times as long as the lobes. Pappus biseriate; inner series of (4)6–12 bristles ca. 3.5–4.5 mm long; outer series of distinct fimbriate squamelle ca. 0.4–1.6 mm long at longest point. Achenes 1.8–2.5 mm long, glandular-dotted, glabrous.

This species occurs in Colombia, Venezuela, Guyana, Surinam, and northern Brazil in rain-forest and other moist areas up to ca. 1,500 m elevation. Flowering and fruiting occur throughout the year but most frequently from December to March.

REPRESENTATIVE SPECIMENS. **Colombia:** DEPTO. VAUPES, Rio Papuri, mt. below Teresita, *Schultes & Cabrera 19471* (GH, NY, US). **Venezuela:** EDO. BOLIVAR, 6° 15' N lat., 62° 47' E long., *Steyermark 106354* (VEN); TERR. FED. AMAZONAS, Upper slopes of Piedra Araucaua, Rio Yatua, *Wurdack & Adderley 43467* (F, NY, S, US, VEN). **Guyana:** ESSEQUIBO STATE: Mt. Kanaima, *Whitton 134* (K), Pakaraim Mts., W bank of Kamarang River, upper Mazaruni River basin, above mouth of Utsch River,

Tillett & Tillett 45788 (NY, US), Mt. Roraima, along Kukenam River at Roraima ford, Paulo, *Tate 169* (NY), Kanuku Mts., Wabuwak, mt. top, *Woodblock 5814* (K, NY). **Surinam:** NICKERIE STATE, Wilhelmina Gebergte, *Stahel 7045* (NY). **Brazil:** EDO. PARA, Maloca, Uecran, *Von Luetzelburg 21592* (M).

15. *Pollalesta faustiana* Stutts, *sp. nov.*

Frutex vel arbor, 3–6-meteralis, caulibus tomentosis. Petioli ca. 0.7–2 cm longi; folia ovalis-elliptica vel elliptica, 6–11 cm longa, 3–5 cm lata, longitudo cum latitudine ratione ca. 2, apicibus acuminatis, basibus cuneatis, supra glabrescentia, infra conferta stellata tomentosa, marginibus subserrulatis. Capitula 3–4 flora; involucri cylindrica, 5.75–6.75 mm longa; phyllaria 22–25, imbricata, marginibus villousis, apicibus tomentosis et glandulosis. Corollae ca. 4.5 mm longae, albae, glandulosae; tubus cum lobis ratione ca. 0.9. Pappus biserialis; aristae interiores 8 elongatae lineares ca. 3.5–4 mm longae; aristae exteriores inaequales breves ca. 0.5–1 mm longae irregulariter laciniatae. Achaenia ca. 2.2 mm longa, glabra et glandulosa. **TYPUS:** Venezuela, Edo. Bolivar: Rio Suapure, along river between Raudal Budare and Raudal Pta. Brava, 70–80 river km from mouth, *Wurdack & Monachino 41267* (HOLOTYPE, K!; ISOTYPES, F!, GH!, NY!, US!).

This species is known only from the type collection. Times of flowering and fruiting are not known. This species can be distinguished from the related species *Pollalesta schomburgkii* by its having 22–25 phyllaries per head. This species is named in honor of Dr. W. Zack Faust, whose teaching ability and enthusiasm for the subject was very instrumental in the development of my interest in botany.

16. *Pollalesta milleri* (J. R. Johnst.) Aristeg., Bol. Soc. Venez. Ci. Nat. 23(103): 268. 1963.

Vernonia milleri J. R. Johnst., Proc. Amer. Acad. Arts 2: 698. 1905. **TYPE:** Venezuela, Edo. Nueva Esparta, El Valle, *Miller & Johnston 254* (HOLOTYPE, GH!; ISOTYPES, GH!, K!, NY!, US!).

Oliganthes milleri (J. R. Johnst.) Gleas., Bull. Torrey Bot. Club 46: 251. 1919.

Shrub, 1–4 m tall, young stems stellate-tomentose. Petioles densely stellate-tomentose, 0.3–1.5 cm long; leaf blades elliptic to rarely ovate-elliptic or elliptic-lanceolate, (2.5)3.5–7.5(11.5) cm long, 1.1–5.2 cm wide, length/width ratio ca. 2.3, acute at the apex,

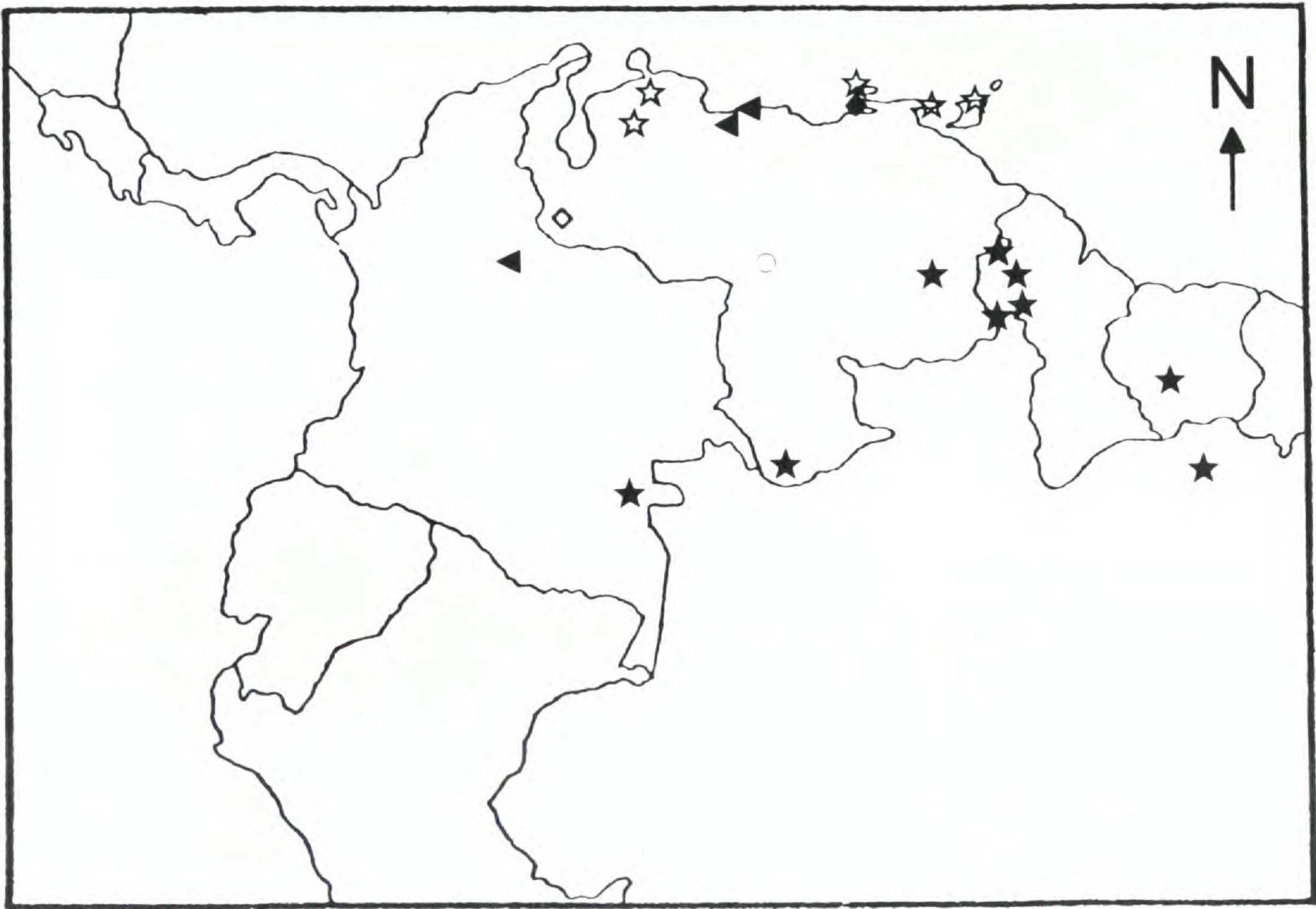


Figure 6. Distribution of *Pollalesta*: ☆ = *P. Milleri*, ★ = *P. schomburgkii*, ◆ = *P. neglecta*, ◇ = *P. rarissima*, ▲ = *P. macrophylla*, ○ = *P. faustiana*.

cuneate to obtuse at the base, becoming glabrous above, densely stellate below, margins entire to rarely subserrulate. Heads with 3–5 florets; involucre elliptic-cylindric, 4–5.5 mm long; phyllaries 8–14, lanate, glandular-dotted near the apex. Corollas 4–6 mm long, white, glandular-dotted; tube ca. 1.4 times as long as the lobes. Pappus biseriate; inner series of 8–10 bristles ca. 3–4 mm long; outer series of distinct fimbriate squamelle ca. 0.3–0.8 mm long at longest point. Achenes 1.9–2.4 mm long, glandular-dotted, thinly puberulent.

This species occurs in Venezuela and Trinidad in sparsely wooded areas up to ca. 1,300 m elevation. Flowering and fruiting occur throughout the year but most frequently from December to March.

REPRESENTATIVE SPECIMENS: **Venezuela**: EDO. FALCON, Along road near La Pena, *Lasser & Foldats* 2968 (NY, VEN); EDO. LARA: Sicarigua, *Tomayo* 306 (US, VEN); EDO. NUEVA ESPARTA, Guayamuri, *Gines* 4000 (US); EDO. SUCRE: La Planisa, vicinity of Cristobal Colon, point near the sea, *Broadway* 509 (GH, NY, US). **Trinidad**: Monos Island, W end, hillside, *Britton, Britton & Brown* 2738 (GH, NY, US).

EXCLUDED NAMES

The following names have been referred to *Pollalesta* but were either never validly published (*), or should properly be referred to taxa unrelated to this genus.

Dialesta discolor* H.B.K. var. *polychaeta* Steetz ex Seem., Bot. Voyage Herald pp. 140–141. 1854. = *Pollalesta discolor* (H.B.K.) Aristeg., Bol. Soc. Venez. Ci. Nat. **23(103): 275. 1963.

Dialesta staavioides Mart. ex DC., Prod. **5**: 79. 1836. = *Lychnophora staavioides* Mart., Denkschr. Konigl.-Baier. Bot. Ges. Regensburg **2**: 154. 1822.

Eupatorium condensatum* Reichb. ex Less., Linnaea **4: 337–338. 1829. = *Pollalesta acuminata* (H.B.K.) Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 282–283. 1963.

Eupatorium cornifolium* Willd. ex Less., Linnaea **4: 337. 1829. = *Pollalesta acuminata* (H.B.K.) Aristeg., Bol. Soc. Venez. Ci. Nat. **23**(103): 282–283. 1963.

Eupatorium cydoneifolium* (*cydoniaefolium*) Willd. ex Less., Linnaea **4: 269. 1829. = *Pollalesta vernonioides* H.B.K., Nov. Gen. et Sp. **4**: 47. 1820.

Eupatorium domingense Spreng., Systema Vegetabilium, Ed. 16 (= Ed. 17) 3: 412. 1825. = *Piptocoma rufescens* Cass., Bull. Soc. Philom. Paris Ser. 3. 5: 58. 1818.

**Oliganthes condensata* (Less.) Sch.-Bip. var. *aristata* Aristeg., Mss. = *Pollalesta hypochlora* (Blake) Aristeg., Bol. Soc. Venez. Ci. Nat. 23(103): 280–281. 1963.

Oliganthes jelskii Hieron., Bot. Jahrb. Syst. 36: 461–462. 1905. This plant is known only from the original description and photographs of the type specimen (Peru: *Jelski* 624) which was destroyed at Berlin. While no definite placement can be made from the available information, the plant does not appear to belong in *Pollalesta*.

Oliganthes karwinskii Sch.-Bip., Linnaea 20: 505. 1847. = *Vernonia tarchonanthifolia* (DC.) Sch.-Bip., Linnaea 20: 507. 1847.

Oliganthes oxylepis Benth., Gen. Pl. 2: 233. 1873. = *Harleya oxylepis* (Benth.) Blake, J. Wash. Acad. Sci. 22: 381. 1932.

Oliganthes rufescens (Cass.) Sch.-Bip., Pollichia 20–21: 338. 1863. = *Piptocoma rufescens* Cass., Bull. Soc. Philom. Paris Ser. 3. 5: 58. 1818.

**Vernonia dichocarpa* Spreng., Systema Vegetabilium, Ed. 16 (= Ed. 17) 3: 437. 1825. = *Pollalesta vernonioides* H.B.K., Nov. Gen. et Sp. 4: 47. 1820.

**Vernonia dichocarpa* Less., Linnaea 4: 269. 1829. = *Pollalesta vernonioides* H.B.K., Nov. Gen. et Sp. 4: 47. 1820.

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